

In the Attorney Docket No.:

Please replace old Attorney Docket No. "050324-1220" with new Attorney Docket No. --02SPE133P--.

In the Claims:

Please enter the following amended claims 1, 9, 26, and 35:

1. (Twice Amended) A method of forming a varactor device on a semiconductor substrate, comprising the steps of:

providing an epitaxial layer situated in said semiconductor substrate, said semiconductor substrate having a first conductivity type and said epitaxial layer having a second conductivity type;

providing an isolation structure on said semiconductor substrate, said isolation structure defining an implant region, said implant region being situated over said epitaxial layer;

selecting a first peak dopant concentration and a first implant energy such that at least one of capacitance, leakage current, and tuning range of the varactor device is optimized;

forming a first implant in said epitaxial layer using said first implant energy, said first implant having said first peak dopant concentration and said second conductivity type, wherein said first implant extends into said epitaxial layer a first distance;

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forming a second implant in said epitaxial layer using a second implant energy,
said second implant having a second peak dopant concentration and said second
conductivity type, wherein said second implant extends into said epitaxial layer a second
distance, wherein said second distance is greater than said first distance.

9. (Once Amended) A method of forming a varactor device on a semiconductor
substrate, comprising the steps of:

providing an epitaxial layer situated in said semiconductor substrate, said
semiconductor substrate having a first conductivity type and said epitaxial layer having a
second conductivity type;

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providing an isolation structure on said semiconductor substrate, said isolation
structure defining an implant region, said implant region being situated over said epitaxial
layer;

forming a first implant in said epitaxial layer using a first implant energy, said first
implant having a first peak dopant concentration and said second conductivity type,
wherein said first implant extends into said epitaxial layer a first distance;

forming a second implant in said implant region of said isolation structure using a
second implant energy, said second implant having a second peak dopant concentration
and said second conductivity type, wherein said second implant extends into said epitaxial
layer a second distance,

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end wherein said second distance is greater than said first distance, wherein said first peak dopant concentration and said first implant energy are selected such that at least one of capacitance, leakage current, and tuning range of the varactor device are optimized, and wherein said second peak dopant concentration and said second implant energy are selected with relation to said first peak dopant concentration and said first implant energy such that the base resistance of the varactor device is minimized.

26. (Twice Amended) A method of forming a varactor device on a semiconductor substrate, comprising steps of:

03 providing an epitaxial layer situated in said semiconductor substrate, said semiconductor substrate having a first conductivity type and said epitaxial layer having a second conductivity type;

selecting a first peak dopant concentration and a first implant energy such that at least one of capacitance, leakage current, and tuning range of the varactor device is optimized;

forming a first implant in said epitaxial layer using said first implant energy, said first implant having said first peak dopant concentration and a second conductivity type, wherein said first implant extends into said epitaxial layer a first distance;

forming a second implant in said epitaxial layer using a second implant energy, said second implant having a second peak dopant concentration and said second conductivity type, wherein said second implant extends into said epitaxial

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enc layer a second distance, wherein said second distance is greater than said first distance.

35. (Once Amended) A method of forming a varactor device on a semiconductor substrate, comprising the steps of:

02 providing an epitaxial layer situated in said semiconductor substrate, said semiconductor substrate having a first conductivity type and said epitaxial layer having a second conductivity type;

forming a first implant in said epitaxial layer using a first implant energy, said first implant having a first peak dopant concentration and a second conductivity type, wherein said first implant extends into said epitaxial layer a first distance;

forming a second implant in said epitaxial layer using a second implant energy, said second implant having a second peak dopant concentration and said second conductivity type,

wherein said second distance is greater than said first distance, wherein said first peak dopant concentration and said first implant energy are selected such that at least one of capacitance, leakage current, and tuning range of the varactor device are optimized, and wherein said second peak dopant concentration and said second implant energy are selected with relation to said first peak dopant

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enc concentration and said first implant energy such that the base resistance of the
varactor device is minimized.
